

A new hybrid embedding method in iris biometric system

ABSTRACT

The challenging part in achieving high security biometrics data is viewed from the engineering perspective which includes security, accuracy, speeds and application size. The objective of this paper is to increase the accuracy through an embedding technique. A combination of modified pixel value differencing and wavelet decomposition techniques were used in this study. The pixels were scanned in a new direction embedded with the wavelet difference matrix. The system is developed using both eyes and each eye is enrolled with 10 snaps. The embedding process creates the embedded iris feature and the reverse process of embedding is known as de-embedding. Two thousands iris from CASIA database are used. The application is developed using MATLAB and executed for 5-20 iterations. The new hybrid system shows better performance in accuracy in terms of False Acceptance Rate (FAR), embedding capacity and Peak Signal to Noise Ratio (PSNR) values as benchmarked with the existing method. The finding shows that the output of the embedding capacity is 743801 and 41.10dB of PSNR. The good PSNR value is between 40-50 dB. The implication of this study contributes to a higher accuracy in iris biometric security. Future work should focus on the genetic algorithm to recognize human iris in biometric system.

Keyword: Pixel value differencing; Wavelet decomposition; Iris steganographic; Biometric security; Hybrid system